



MACHAKOS UNIVERSITY

University Examinations for 2021/2022 Academic year

SCHOOL OF ENGINEERING AND TECHNOLOGY

DEPARTMENT OF COMPUTING AND INFORMATION TECHNOLOGY

FIRST YEAR FIRST SEMESTER EXAMINATION FOR

BACHELOR OF SCIENCE (CLOUD COMPUTING AND INFORMATION SECURITY)

SCC 101: OVERVIEW OF IOT COMMUNICATION TECHNOLOGIES

DATE: 26/1/2022

TIME: 11.00-1.00 PM

INSTRUCTIONS: Answer Question ONE and any other TWO Questions

QUESTION ONE (30 MARKS) (COMPULSORY)

- a) Define the following
 - i. Automation (2 marks)
 - ii. Network (2 marks)
 - iii. Edge or “fog” computing (2 marks)
- b) Explain the function of the following components in an IOT system.
 - i. Arduino (2 marks)
 - ii. IOT Platform (2 marks)
 - iii. Smart device (2 marks)
- c) Distinguish between the following pairs
 - i. Micro-processor and micro-controller (4 marks)
 - ii. Actuator component and sensor component (4 marks)
- d) Name any FOUR possible ways (Technology) to connect devices in an IOT system (4 marks)
- e) Describe briefly THREE important factors to consider when connecting internet of things (6 marks)

QUESTION TWO (20 MARKS)

- a) A company plans to add many more devices as part of an IoT solution. Explain three challenges that the company is likely to face because of this rapid growth of digitization. (6 marks)
- b) IOT Systems may operate without the need for cloud computing. However, there are substantial benefits if data processing and commanding take place in the cloud via an internet connection. Briefly describe these benefits. (6 marks)
- c) Describe four key components of an IOT system (8 marks)

QUESTION THREE (20 MARKS)

- a) Applications for IoT extend across a broad variety of use cases and verticals. However, all complete IoT systems are the same in that they represent the integration of four distinct components. Describe how an IOT system works by describing these components and how they are integrated (10 marks)
- b) Explain any FIVE factors to consider when choosing an IOT Platform (10 marks)

QUESTION FOUR (20 MARKS)

- a) There are numerous applications where the Internet of Things can be used. Choose any FOUR application areas of IOT in Kenya and explain the role IOT plays. (8 marks)
- b) Briefly describe important IOT standards that IoT enabled devices must comply with. (8 marks)
- c) There are many and diverse job careers in IoT field. Briefly explain any FOUR job designations for an IOT specialist (4 marks)

QUESTION FIVE (20 MARKS)

- a) Describe the importance of APIs in IOT applications (6 marks)
- b) Explain the advantages and disadvantages of IOT Systems (6 marks)
- c) No complete IoT solution can be built without some kind of hardware. Choices about the hardware affect everything downstream, from the connectivity you choose, to the analytics you're able to provide, and to the interactions and interfaces that you enable for end-users. Describe some important factors you need to consider in your choice of IOT hardware. (8 marks)